Guidelines for Uncertainty Sections in CIE D2 Technical Reports

1. TC Reports should cover technical aspects of the measurement itself in the subject area of the TC Report.

2. TC Reports should **not** give detailed descriptions regarding the calculation of measurement uncertainties.

3. TC Reports should include a section on "Measurement Uncertainty" (or similar title), which should contain a statement similar to:
   "Uncertainties should be estimated for each measured value, or value combined from other measured values, in accordance with the procedures given in the ISO Guide to the Expression of Uncertainty of Measurement (GUM)." This ISO Guide should also be included in the list of references for the TC Report.

4. Other documents and papers may also be referenced as appropriate. For example, the Technical Report currently being prepared by CIE TC2-43 is a good reference for basic principles and for the expression of measurement uncertainties (coverage factors, etc.).

5. For TC Reports or Standards dealing with the definition of instrument characteristics (e.g. TC2-40), the statement given in point 3, and any additional references as in point 4, should generally suffice. In the case of characteristics such as f_1', where first-order techniques fail, a further statement may be added to indicate that special techniques, such as a Monte-Carlo estimation, may be required to estimate the uncertainty for this quantity.

6. For TC Reports dealing with the correct use of measurement equipment and/or the measurement, testing or calibration of materials, detectors, lamps etc., additional information should be given in the "Measurement Uncertainty" section of the Report, focusing on:
   a. A summary of the key uncertainty components for the specific measurements discussed in the Report, with representative examples for some of these if necessary.
   b. Methods/approaches for determining the uncertainty contribution for each component, or references to other reports, documents or papers giving this information.
   c. Information on likely correlations (if any) between individual uncertainty components.
   d. Information on sensitivity coefficients for specific uncertainty components, in cases where particular considerations apply (e.g. an indication that a 0.1 % change in lamp current for an incandescent lamp results in ~0.7 % change of luminous flux, if this is relevant).

   Note that it could be most convenient to present points a and d in the form of a tabulated uncertainty budget, but it must be made clear that this is for guidance only: for example, it may not include all components (since these depend on the precise measurement set up used) and not all the listed components will always be relevant.

7. If necessary, TC Reports should give references to relevant reports, documents or papers dealing with detailed calculations for particular quantities; the actual calculations should not be repeated. Specific calculation techniques may be included only if this is essential and is not adequately covered in other references. For example, slightly more detailed guidelines may be useful for multiple input/output problems, such as tristimulus colorimeters, where a number of sensitivity coefficients have to be determined simultaneously for interacting components.

8. In all cases, the overall guiding principle is that the determination of measurement uncertainty should not be the dominant theme of the Report (unless of course it is the specific scope of the Report, such as for TC2-43).